

IN THE CLAIMS

The following listing of claims will replace all prior versions and listings of claims in the application.

Listing of Claims

Claims 1 to 17 (canceled).

Claim 18 (currently amended): A process for manufacture of nuclear fuel pellets through sintering of a material containing uranium dioxide UO_2 obtained from a powder originating from a process for a dry route conversion of uranium hexafluoride UF_6 comprising:

obtaining the powder directly by the UF_6 hexafluoride dry route conversion process;
placing the powder in a vessel containing moving, compressing and mixing bodies,
wherein the moving bodies are wholly free within the interior of the vessel and move in three noncoplanar axes with the powder;

agitating the vessel such that the powder moves within a volume of the vessel in the three noncoplanar axes to be compressed between moving bodies and walls of the vessel to form a particulate material having a density in an uncompacted state of at least 1.7 g/cm^3 ; and

shaping the particulate material obtained by agitation in the vessel into raw fuel pellets that undergo sintering

wherein the particulate material is not sieved before shaping and no binder is added to the powder of the particulate material before the shaping.

Claim 19 (previously presented): The process according to claim 18, wherein the vessel is subjected to three-dimensional vibratory movement.

Claim 20 (previously presented): The process according to claim 18, wherein the powder placed in the vessel has a density of less than 1 g/cm^3 and the density of the particulate material obtained by agitation in the vessel is approximately 2.0 g/cm^3 in an uncompacted state.

Claim 21 (previously presented): The process according to claim 18, wherein the powder obtained directly by the UF_6 hexafluoride dry route conversion process has a density of less than 1 g/cm^3 and a flowability of zero as defined by a standard test of passage through a 15 mm orifice and in that the particulate material obtained by agitation in the vessel has a flowability of more than 10 g/s after three minutes agitation in the vessel.

Claim 22 (previously presented): The process according to claim 18, wherein the vessel containing the moving bodies and the powder obtained by a UF_6 hexafluoride dry route conversion process is agitated for a time between 1 and 600 minutes.

Claim 23 (previously presented): The process according to claim 18, wherein the moving compression and mixing bodies in the vessel are free bodies having any simple geometrical shape.

Claim 24 (previously presented): The process according to claim 23, wherein the moving bodies are cylindrically shaped.

Claim 25 (previously presented): The process according to claim 23, wherein the moving bodies are substantially spherical beads.

Claim 26 (previously presented): The process according to claim 18, wherein the moving bodies are one of sintered alumina Al_2O_3 , sintered uranium oxide, pure sintered zirconium, doped sintered zirconium oxide, tungsten carbide, steels, uranium metal and uranium/titanium alloy.

Claim 27 (previously presented): The process according to claim 18, wherein before the vessel is agitated at least one additive comprising at least one pore-forming agent in a proportion equal to at least 0.01% is added to the vessel together with the uranium dioxide UO_2 powder obtained directly by the UF_6 hexafluoride dry route conversion process.

Claim 28 (previously presented): The process according to claim 27, wherein at least one additive is added to the vessel together with uranium dioxide UO_2 powder obtained directly by the UF_6 hexafluoride dry route conversion process.

Claim 29 (previously presented): The process according to claim 28, wherein the additive is placed in the vessel before performing the treatment through agitation of the vessel.

Claim 30 (previously presented): The process according to claim 28, wherein the additive is placed in the vessel in a course of treatment through agitation of the vessel.

Claim 31 (previously presented): The process according to claim 28, wherein the additive comprises at least one of uranium oxide U_3O_8 , uranium oxide U_3O_7 , plutonium oxide PuO_2 , thorium oxide ThO_2 , gadolinium oxide Gd_2O_3 , pore-forming substance, lubricant, and sintering doping agents.

Claim 32 (previously presented): The process according to claim 18, wherein mixed uranium oxide-plutonium oxide fuel pellets are produced, further comprising:

- placing the vessel in a confinement enclosure;
- placing the uranium oxide, plutonium oxide powders and additives in the vessel; and
- agitating the vessel in a manner that is controlled from outside the containment enclosure.

Claim 33 (previously presented): The process according to claim 18, further comprising:

adding a lubricating material to the particulate material prior to shaping the pellets by compression of the particulate material obtained by agitation in the vessel; and
preparing a soft mixture of the particulate material and the lubricating in order to distribute the lubricating material over the particles of the particulate material.

Claim 34 (previously presented): The process according to claim 32, further comprising:
mixing the particulate material comprising uranium oxide UO_2 obtained by agitation of the conversion powder with the plutonium oxide powder PuO_2 in the presence of moving bodies before shaping of the pellets for the production of mixed uranium oxide plutonium oxide fuel pellets.